

MAIN LINE SCHOOLS

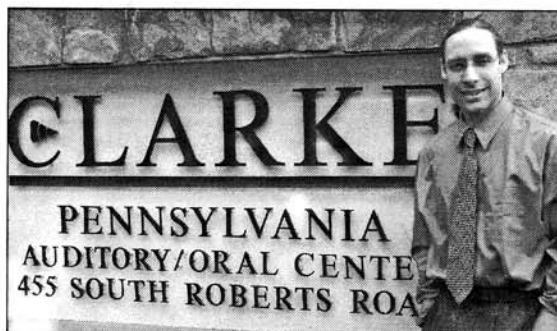
New or reconstructed, will they be 'green' schools?

By DAVID ROBINSON

As the discussion moves forward over the construction of Lower Merion's high schools, another component of the planning was presented last year at an Interschool Council/Home and School Association meeting. The featured speaker was Scott Kelly, a partner at Re:Vision Architecture and representative of the Northeast Sustainable Energy Association (NESEA). His presentation was called Building High Performance Green Schools, which Kelly defines as "buildings that give more to the students and take less from the environment."

Recently, Kelly visited a near-by "green" school to discuss the concept of an environmental and student friendly school building. The Clarke School, Pennsylvania at 455 S. Roberts Road, across from Presbyterian Children's Village in Rosemont, is one of the nationwide branches of Clarke School for the Deaf. Founded in 1867 in Northampton, Mass., Clarke School was the first permanent oral (non-signing) school for the deaf in this country. The Rosemont Clarke School, which opened in 2002 under the direction of Dan Salvucci, has toddler, preschool and kindergarten programs, and provides individual speech and language therapy, as well as support to schools with hearing-impaired children. The center has four classrooms therapy rooms, a parent/infant room, kitchen, library and parent room. All are equipped with observation areas and amplification equipment.

Kelly's firm, Re:Vision Architecture, ranges from designing single family homes, to schools, nature centers and office buildings. "For schools, the most important factor is creating space that enhances the performance of students. Besides generating significant



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Scott Kelly, architect and advocate for high performance green schools.

annual savings in energy costs, a high-performance green school can lead to other benefits, such as better attendance and improved attention. Many of these benefits have been directly linked to an increase in natural light throughout green schools."

Sited on a steep hillside, the Clarke School had an existing structure that was to be demolished to make way for a new building. "From the start," said Kelly, who led the project for his former firm, "we immediately looked at the sustainable environmental impact and saw that we could save the owner money by thinking 'green.' We proposed using the existing building, along with the beams, wood and trim in our design. The old wood cabinets and light fixtures were salvaged and given to Habitat for Humanity. This 'reuse - don't demolish' concept saved Clarke \$100,000. When we look at any site, we consider three factors: the ecology of the surrounding area, the short and long-term economic goals for the project and potential impact on the surrounding community.

"An early plan called for a semi-circular drive with an entrance at one end of the property coming off Roberts Road, passing by the front door, and moving back up the hillside to an exit onto Roberts at the other end of the property. Thinking of

the students, we immediately saw a safety problem of moving buses near the front door of a school for hearing impaired, where children might be running out of school and not hear approaching buses. The ecological problem was the amount of driveway that would be cutting through natural green space on the hillside.

"We believe if we protect ecology, we can also save money," Kelly said, "because there is less to build and the result costs less to operate. By moving the interior circle away from the main entrance, we prevented a potentially dangerous situation and saved some of the existing natural hillside. The new driveway saved another \$75,000 and gained space for a playground in front of the building."

Kelly is an alumnus of the Lower Merion School District. "Like most older classrooms, The Lower Merion High School has relatively poor classroom acoustics. Students sitting at the back of the class have a much more difficult time of hearing the teacher. Clarke, as a school for teaching hearing and language distinction, is designed to heighten and clarify acoustics

for the children. Ecologically, an important part of our designs are the wall coverings. They are made nearby and that supports the local economy, plus it helps the air quality as it cuts down on fuel and exhaust emissions, since the material travels a shorter distance. Homasote, a superior acoustic material, is made in Trenton of 100 percent recycled newspaper. It is 1/2 inch thick and allows for pinning school projects directly onto the wall and can be used over dry wall or made thicker to replace dry wall. Higher up on the walls, the covering is Tectum, made of Aspen bark, a waste product that has very good acoustical properties and helps reduce reverberation time, something that is essential for the hearing impaired."

Three primary areas of consideration are the building orientation, efficiency of the envelope or building shell and the heating and cooling. "Clarke's envelope is R42, which is 50 percent better than code," Kelly said. "The walls are R25, which saves 30 percent of normal heating and cooling costs. The benefit is that the school has that money to spend on teachers and the kids. Heating and cooling are provided by multiple high efficiency small boilers that allow for individually controlled temperatures in the classrooms."

In terms of site ecology, Kelly designed the structure and grounds to direct storm water run off into an underground permeable tank, so the water percolates back into the soil. The water and plumbing are low flow, so that interior water use is conserved.

A great deal of the interior design supports the environmental quality of teaching and learning. "A building is part of

the educational process," Kelly said. "In the classroom, Clarke teachers often work on the floor with students, so we placed a white board low down on the wall, right beside the teachers, where they can write words or draw pictures to support to the learning process."

The windows were also placed down at the height of young children. High windows up near the ceiling provide an overhead light, and enclosed courtyards provide daylight from more than one direction. "Light is crucial for the children to clearly see the lip movements in their teacher's speech," Kelly said. "All the windows bring tons of daylight into the room. On most days, you don't need to use overhead lighting. Research has shown that if children are given daylight, rather than fluorescent lighting, they learn 26 percent faster. The fluorescents have three settings to supplement the daylight, when needed."

Kelly pointed out that the finishes on the woods are non-volatile. He was very proud of the small lightweight chairs. Each had a cutout in the back to allow tiny fingers to pull and glide the chairs easily to wherever they chose to work. "We made a serious effort to make classrooms and building feel like home to the kids. We even made the kitchen look residential so the kids would feel comfortable."

"Considering the fact that the Environmental Protection Agency ranks air quality as the fifth largest health concern," Kelly explained, "we introduced a greater portion of outside air into the classroom. We do this in a more environmentally and ecological conscious way by using a 'heat recovery wheel.' The wheel takes heat out of the exhaust air and puts it back into incoming fresh air."

"The idea of creating a cost-effective green building involves looking at the integration of the systems. If you have balance in the categories, you find one component is also contributing to many other categories and you create healthy, cost-effective and productive places to learn."

One way to make sure you have green school is to go through a third party certification, such as Leadership in Energy and Environmental Design, which uses a rating system of the U.S. Green Building Council. Kelly has practiced in the Philadelphia area for over a decade. He is chair of the Philadelphia American Institute of Architects Committee on the Environment and a founding member of the Delaware Valley Green Building Council. Re:Vision Architecture's current green projects include work at Peace Valley Nature Center, The Chester County Conservation District offices and The Walden School in Media.